

CHARGE NUMBER : 1801

PROJECT TITLE : Expanded Tobacco Development

PERIOD COVERED: September 1-30, 1985

PROJECT LEADER: G. Gellatly

I. CO₂ IMPREGNATION

A. Objective

To find means of CO₂ impregnation of tobacco without clumping.

B. Status

Two stage spray reordered DIET product in 100% cigarettes of the same firmness did not show any weight difference compared with MC DET. The cigarettes of pilot plant product did, however, show a three fold reduction of loose ends (0.4 gms/50 cigts) compared to MC DET (1.2 gms/50 cigts). Cigarettes containing 30% DIET and MC DET in MF filler did not show this loose end difference. Coal strength analysis is not yet available.

Single stage reordering to 11% on a 20 ft vibrating conveyor showed that this can be done without loss of longs and with less CV loss (0.5 units) than in a cylinder (0.8 units). Ordering was done at eight points into free falls from ramps along the conveyor length in 45 seconds (cylinder reordering time is 2 minutes).

A three foot wide vibrating conveyor was installed in the pilot plant to develop design data at up to 4000 lbs/hr tobacco for a commercial installation using tobacco beds of 4" and greater.

C. Plans

1. Develop design data and OV variability for a commercial design of single and two stage reordering of tobacco beds 4" and greater.
2. Determine the mechanism of CV loss between the tower and reordering.

II. UNFOLDED STRIP

A. Objective

To evaluate processing and structural characteristics of unfolded strip for improved filler length and cigarette quality.

2001116395

B. Status

Potential advantages and problems associated with strip unfolding in the stemmery were examined. It was shown that drying fresh strip in the all steam atmosphere (8" tower) prevents the curling incurred in the conventional stemmery drying. When unfolded strip was prized in the hogshead to the same weight as DBC bright (850 lbs), it was more loosely packed. Penetration studies showed that it took 20% less force to penetrate unfolded strip hogshead in a horizontal direction than it took for the control. Separating unfolded strip after prized was not different from control strip.

It was confirmed that recurling of unfolded strip did not recur during casing in a cylinder (no sieve change). It was also confirmed that longer filler is generated from unfolded strip (4.8% +6 mesh) than the control (2.3% +6 mesh) from the cigarette maker. No difference in filler length from unfolded or control strip was observed by cutting on the cross-country feeder/cutter rather than on a normal cutter.

C. Plans

1. Establish where curling of strip takes place in stemmery and primary and determine if this curling can be prevented.
2. Determine the effect of tobacco grade on curling.
3. Establish the feasibility of unfolding strip in non-tower processes.

III. NEW EXPANSION PROCESS DEVELOPMENT

A. Objective

To define the fundamental mechanisms governing impregnant retention, puffing, and setting for the development of a new tobacco expansion process with improved product and process attributes.

B. Status

The mixed-gas hydrate (help gas) technology was shown to be effective using tobacco from which the bulk of the "hydrate inhibiting salts" had been extracted. Propane help gas (5 mole %) in 800 psi argon doubled the impregnant retention of argon alone for extracted bright tobacco (8% HWS). The help gas improved product expansion by 10%. Extensive study of hydrate formation phase relationships in the tobacco solubles system will be necessary if we wish to define the role of inhibitor salts on impregnation.

C. Plans

1. Evaluate physical and subjective properties of cigarettes with Reemtsma ET versus PM Berlin DIET.
2. Explore the mechanism of non-thermal setting.

/dbb

2001116396